

Patent Claims

- 5 1. A DNA molecule encoding an allergen having the properties of Lol p 4, corresponding to a nucleotide sequence selected from one of the sequences in accordance with SEQ ID NO 1 and 3.
- 10 2. A DNA molecule which hybridises with a DNA molecule according to Claim 1 under stringent conditions and originates from DNA sequences from *Poaceae* species.
- 15 3. A DNA molecule, encoding a polypeptide, which cross-reacts immunologically with the major allergen Lol p 4 from *Lolium perenne* and originates from DNA sequences from *Poaceae* species.
- 20 4. A DNA molecule, corresponding to a partial sequence or a combination of partial sequences according to one or more of Claims 1 to 3, which encodes an immunomodulatory, T-cell-reactive fragment of a group 4 allergen from the *Poaceae*.
- 25 5. A DNA molecule, corresponding to a nucleotide sequence according to one or more of Claims 1 to 4, encoding an immunomodulatory T-cell-reactive fragment, characterised in that said nucleotide sequence has been specifically modified by specific mutation of individual codons, elimination or addition.
- 30 6. A DNA molecule according to Claim 5, characterised in that the said mutation results in the replacement of one, a plurality of or all cysteines of the corresponding polypeptide with another amino acid.
- 35 7. A recombinant DNA expression vector or a cloning system comprising a DNA molecule according to one or more of Claims 1 to 6, functionally

linked to an expression control sequence.

- 5 8. A host organism transformed with a DNA molecule according to one or more of Claims 1 to 6 or an expression vector according to Claim 7.
- 10 9. A process for the preparation of a polypeptide encoded by a DNA sequence according to one or more of Claims 1 to 6 by cultivation of a host organism according to Claim 8 and isolation of the corresponding polypeptide from the culture.
- 15 10. A polypeptide which is encoded by a DNA sequence according to one or more of Claims 1 to 6.
- 20 11. A polypeptide according to Claim 10 as medicament.
- 25 12. A pharmaceutical composition comprising at least one polypeptide according to Claim 11 and optionally further active ingredients and/or adjuvants for the diagnosis and/or treatment of allergies in the triggering of which group 4 allergens from the *Poaceae* are involved.
- 30 13. Use of at least one polypeptide according to Claim 11 for the preparation of a medicament for the diagnosis and/or treatment of allergies in the triggering of which group 4 allergens from the *Poaceae* are involved and/or for the prevention of such allergies.
- 35 14. A DNA molecule according to one or more of Claims 1 to 6 as medicament.
15. A recombinant expression vector according to Claim 7 as medicament.
16. A pharmaceutical composition comprising at least one DNA molecule according to Claim 14 or at least one expression vector according to

Claim 15 and optionally further active ingredients and/or adjuvants for the immunotherapeutic DNA vaccination of patients with allergies in the triggering of which group 4 allergens from the *Poaceae* are involved and/or for the prevention of such allergies.

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17. Use of at least one DNA molecule according to Claim 14 or at least one expression vector according to Claim 15 for the immunotherapeutic DNA vaccination of patients with allergies in the triggering of which group 4 allergens from the *Poaceae* are involved and/or for the prevention of such allergies.

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